## This report presents the recommendations of a WHO Expert Committee commissioned to coordinate activities leading to the adoption of international requirements for the production and control of vaccines and other biologicals and the establishment of international biological reference materials. The report starts with a discussion of general issues brought to the Committee's attention and provides information on the status and development of reference materials for various antibodies, antigens, blood products and related substances, cytokines, growth factors, and endocrinological substances. The second part of the report, of particular relevance to manufacturers and national regulatory authorities, contains recommendations for the production and quality control of meningococcal group C conjugate vaccines, guidelines for regulatory expectations for clinical evaluation of vaccines, guidelines for the production and quality control of inactivated oral cholera vaccines and guidelines on viral inactivation and removal procedures intended to assure the viral safety of human blood plasma products.

# WHO EXPERT COMMITTEE ON BIOLOGICAL STANDARDIZATION

Fifty-second Report



WHO Technical Report Series — 924

WHO EXPERT COMMITTEE ON BIOLOGICAL STANDARDIZATION



**World Health Organization** 

Geneva



The World Health Organization was established in 1948 as a specialized agency of the United Nations serving as the directing and coordinating authority for international health matters and public health. One of WHO's constitutional functions is to provide objective and reliable information and advice in the field of human health, a responsibility that it fulfils in part through its extensive programme of publications.

The Organization seeks through its publications to support national health strategies and address the most pressing public health concerns of populations around the world. To respond to the needs of Member States at all levels of development, WHO publishes practical manuals, handbooks and training material for specific categories of health workers; internationally applicable guidelines and standards; reviews and analyses of health policies, programmes and research; and state-of-the-art consensus reports that offer technical advice and recommendations for decision-makers. These books are closely tied to the Organization's priority activities, encompassing disease prevention and control, the development of equitable health systems based on primary health care, and health promotion for individuals and communities. Progress towards better health for all also demands the global dissemination and exchange of information that draws on the knowledge and experience of all WHO's Member countries and the collaboration of world leaders in public health and the biomedical sciences.

To ensure the widest possible availability of authoritative information and guidance on health matters, WHO secures the broad international distribution of its publications and encourages their translation and adaptation. By helping to promote and protect health and prevent and control disease throughout the world, WHO's books contribute to achieving the Organization's principal objective – the attainment by all people of the highest possible level of health.

The WHO Technical Report Series makes available the findings of various international groups of experts that provide WHO with the latest scientific and technical advice on a broad range of medical and public health subjects. Members of such expert groups serve without remuneration in their personal capacities rather than as representatives of governments or other bodies; their views do not necessarily reflect the decisions or the stated policy of WHO. An annual subscription to this series, comprising about 10 such reports, costs Sw. fr. 132. – (Sw. fr. 92.40 in developing countries).

## SELECTED WHO PUBLICATIONS OF RELATED INTEREST

## WHO Expert Committee on Biological Standardization.

Fifty-first report.

WHO Technical Report Series, No. 910, 2002 (104 pages) web site www.who.int/biologicals

## WHO Expert Committee on Biological Standardization.

Fiftieth report.

WHO Technical Report Series, No. 904, 2002 (107 pages)

## WHO Expert Committee on Biological Standardization.

Forty-ninth report.

WHO Technical Report Series, No. 897, 2000 (106 pages)

## WHO Expert Committee on Biological Standardization.

Forty-eighth report.

WHO Technical Report Series, No. 889, 1999 (111 pages)

## WHO Expert Committee on Biological Standardization.

Forty-seventh report.

WHO Technical Report Series, No. 878, 1998 (107 pages)

Further information on these and other WHO publications can be obtained from Marketing and Dissemination, World Health Organization, 1211 Geneva 27, Switzerland.

This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization

## WHO Technical Report Series

**924** 

## WHO EXPERT COMMITTEE ON BIOLOGICAL STANDARDIZATION

Fifty-second Report



**World Health Organization** 

Geneva 2004

WHO Library Cataloguing-in-Publication Data

WHO Expert Committee on Biological Standardization (2001: Geneva, Switzerland) WHO Expert Committee on Biological Standardization: fifty-second report.

(WHO technical report series; 924)

1.Biological products - standards 2.Vaccines - standards 3.Blood 4.Cytokines - standards 5.Reference standards 6. Guidelines I.Title II.Series

ISBN 92 4 120924 0 (LC/NLM classification: QW 800)

ISSN 0512-3054

## © World Health Organization 2004

All rights reserved. Publications of the World Health Organization can be obtained from Marketing and Dissemination, World Health Organization, 20 Aveunue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 2476; fax: +41 22 791 4857; email: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to Publications, at the above address (fax: +41 22 791 4806; email: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The World Health Organization does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use.

This publication contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization.

Typeset in Hong Kong Printed in Singapore

## **Contents**

Introduction	1
General  Developments in biological standardization Bioterrorism International nonproprietary names for biotechnology-derived medicinal products	2 2 4
International guidelines, recommendations and other matters related to the manufacture and quality control of biologicals  Guidelines on clinical evaluation of vaccines: regulatory expectations Group C meningococcal conjugate vaccines Inactivated oral cholera vaccines Guidelines on viral inactivation and removal procedures intended to assure the viral safety of human blood plasma products Pneumococcal conjugate vaccines Potency assays for diphtheria and tetanus vaccines Pertussis vaccines Preventive human immunodeficiency virus vaccines Cell substrate safety Cell banks Yellow fever Poliomyelitis vaccine, oral Transmissible spongiform encephalitis and the safety of biologicals Antivenoms Gene therapy Discontinuation of requirements and guidelines	77 77 8 9 10 11 12 13 14 15 16 16 18 18 20 20
International reference materials Biological substances: international standards and reference reagents	21 21
International biological standards for in vitro diagnostic procedures International reference materials for the diagnosis and study of transmissible spongiform encephalitis	22 23
Antibodies  Human antibody against human platelet antigen 5b	24 24
Blood products and related substances International reference panels for the validation of serological and nucleic acid based test for the detection of hepatitis B, hepatitis C and human immunodeficiency virus in blood screening	24 24
Factors II, VII, IX, X, Plasma Von Willebrand factor Streptokinase Unfractionated heparin and low-molecular-weight heparin	24 26 27 29 30

Cytokines, growth factors and endocrinological substances Human chorionic gonadotrophin Ciliary neurotrophic factor Prolactin and its glycosylated and non-glycosylated components	31 31 32 32
Miscellaneous Pertussis toxin standard	33 33
Annex 1 Guidelines on clinical evaluation of vaccines: regulatory expectations	35
Annex 2 Recommendations for the production and control of meningococcal group C conjugate vaccines	102
Annex 3 Guidelines for the production and control of inactivated oral cholera vaccines	129
Annex 4 Guidelines on viral inactivation and removal procedures intended to assure the viral safety of human blood plasma products	150
Annex 5 Biological substances: international standards and reference reagents	225
Annex 6 Recommendations and guidelines for biological substances used in medicine and other documents	228

## WHO Expert Committee on Biological Standardization

Geneva. 26-30 November 2001

## Members

- Professor W.G. van Aken, Amstelveen, the Netherlands (Vice-Chairman)
- Dr M. de los Angeles Cortes Castillo, Director, Quality Control, National Institute of Hygiene, Mexico DF, Mexico
- Dr R. Dobbelaer, Head, Biological Standardization, Louis Pasteur Scientific Institute of Public Health, Brussels, Belgium
- Dr V. Grachev, Deputy Director, Institute of Poliomyelitis and Viral Encephalitides, Moscow, Russian Federation
- Dr P.H. Makela, Emeritus Professor, Department of Vaccines, National Public Health Institute, Helsinki, Finland
- Dr P.D. Minor, Head, Division of Virology, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Rapporteur*)
- Professor F. Ofosu, Department of Pathology and Molecular Medicine, McMaster University, Hamilton, Ontario, Canada
- Mr Zhou Hai-jun, Honorary Director, National Institute for the Control of Pharmaceutical and Biological Products, Temple of Heaven, Beijing, China
- Dr K. Zoon, Director, Center for Biologics Evaluation and Research, Food and Drug Administration, Rockville, MD, USA (Chairperson)

## Representatives of other organizations

- Council of Europe, European Department for the Quality of Medicines
- Mr J-M. Spieser, Head, Division IV, Biological Standardization and Official Medicines Control Laboratories Network, European Pharmacopoeia Commission, Strasbourg, France
- Dr K-H. Buchheit, Deputy Head, Division IV, Biological Standardization, European Pharmacopoeia Commission, Strasbourg, France
- International Association of Biologicals (IABS)
- Dr A. Eshkol, Senior Scientific Advisor, Aeres Serono International SA, Plan-les-Ouates, Switzerland
- International Federation of Clinical Chemistry (IFCC)
- Professor J.H.H. Thijssen, Department of Endocrinology, University Medical Centre, Utrecht, the Netherlands
- International Federation of Pharmaceutical Manufacturers Associations (IFPMA)
- Dr M. Duchêne, Director, Quality Control, GlaxoSmithKline Biologicals, Rixensart, Belgium
- Dr J.-C. Vincent-Falquet, Scientific Director, Quality Controls, Aventis Pasteur, Marcy l'Etoile, France
- International Society on Thrombosis and Haemostasis (ISTH)
- Professor I. Peake, Deputy Director, Division of Genomic Medicine, Royal Hallamshire Hospital, Sheffield, England

Plasma Protein Therapeutics Association
Dr L. von Hoegen, Director, Regulatory Affairs, Brussels, Belgium

U.S. Pharmacopeia

Dr R. Dabbah, Rockville, MD, USA

### Secretariat

- Dr C. Aaij, Director, Division of Diagnostics, Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, Amsterdam, the Netherlands (*Temporary Adviser*)
- Dr D. Armstrong, Natal Bioproducts Institute, Pinetown, South Africa (*Temporary Adviser*)
- Dr T. Barrowcliffe, Head, Division of Haematology National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr T. Bektimirov, Deputy Director, Tarasevic State Research Institute for Standardization and Control of Medical Biological Preparations, Moscow, Russian Federation (*Temporary Adviser*)
- Dr A. Bristow, Head, Division of Endocrinology National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr T. Burnouf, CEO, Human Plasma Products Services, Lille, France (*Temporary Adviser*)
- Dr D. Calam, The Mill House, Pewsey, Wilts., England (Temporary Adviser)
- Dr M. Corbel, Head, Division of Bacteriology, National Institute for Biological Standards and Control, Potters Bar, Herts., England (*Temporary Adviser*)
- Dr W. Egan, Deputy Director, Office of Vaccines, Center for Biologics Evaluation and Research, Food and Drug Administration, Rockville, MD, USA (*Temporary Adviser*)
- Dr F. Fuchs, Director, Lyon Site, Agence Française de Sécurité Sanitaire de Produits de Santé (AFSSAPS), Direction des Laboratoires et des Contrôles Médicaments Immunologiques et Produits thérapeutiques annexes, Lyon, France (*Temporary Adviser*)
- Dr E. Griffiths, Coordinator, Quality Assurance and Safety: Biologicals, World Health Organization, Geneva, Switzerland (Secretary)

## 预览已结束,完整报告链接和

https://www.yunbaogao.cn/report/index/report

